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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,683	10/03/2003	David R. Rich	02-38	9969

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EXAMINER	
ROSENBERGER, FREDERICK F	

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 10/678,683	**Applicant(s)** RICH ET AL.	
	Examiner Frederick F. Rosenberger	**Art Unit** 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/03/2003*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Priority

1. Applicant's claim to priority under 35 U.S.C. 119(e) for US provisional application 60/416875, filed on October 8th, 2002, is acknowledged.

Information Disclosure Statement

2. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because:

a. Reference character **210** has been used to designate both the direction of airflow (Figure 8 and page 9, paragraph 31, line 16) and a filter assembly (Figure 9 and page 11, paragraph 39, line 2).

b. Reference character **214** has been used to designate both a radiation detection assembly (Figure 8 and page 7, paragraph 26, line 4) and a filter element (Figure 9 and page 11, paragraph 39, lines 2-3).

c. Reference character **216** has been used to designate both the direction of radiation (Figure 8 and page 7, paragraph 26, line 5) and a mounting block (Figure 9 and page 11, paragraph 39, line 3).

4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities:

Page 2, paragraph 7, line 5: "at sample at" should be --at sample--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-5, 8-9, and 12-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Rich (US Patent #5693944).

Rich discloses a method of gas analysis using an analyzer consisting of a two-region cuvette (reference Figures 12-14) and an infrared radiation source **28** and detector setup **30** (reference Figure 2) capable of measuring the gas content based on infrared absorption (column 1, lines 57-63). The cuvette of the setup consists of hollow cylindrical left-hand and right-hand sections, **316** and **318** respectively on an integral platform **320** forming a cell body with a first flowpath (hollow bores **332** and **336** in Figures 12-14).

The cell core **314** is secured between the left-hand and right-hand sections of the body and has a second flowpath disposed therethrough. Said second flowpath through the core comprises a central flowpath region **328**, a connecting region (right half region of flowpath **332**) to the input flowpath **332**, and a connecting region **334** to the outlet flowpath **336**. This second flowpath of the core thus forms a substantially "Z-shaped" configuration.

The cell core is provided with first and second optical apertures (**340** and **342**) with first and second polymer windows (**346** and **348**) adjacent to opposite ends of the central flowpath **328** to allow for infrared characterization of the gas content. Each window is held in place via snap-in retainer rings (**350** and **352** respectively) displaced around each window section.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 6-7 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rich (US Patent # 5693944), as applied to claims 1-5 and 8-9 above, and further in view of Clement (US Patent # 5256160).

In regards to claims 6 and 10, Rich discloses all of the limitations set out in claims 6 and 10 and the corresponding base claims, as discussed above, except for the sample cell core being inserted into a chamber region of the cell body.

Clement teaches a disposable inline valve mechanism for use in biomedical applications, as illustrated in Figures 1-3. Clement discloses a body **12** with air flowpath **28** extending longitudinally through. Said body **12** is molded to include a cylindrical opening **40** intercepting the air flowpath **28** and capable of receiving a one-piece rotor **50**, with flowpath **64** disposed therethrough (column 6, lines 26-36). Said rotor **50** in a stationary position, wherein fluid communication between flowpaths **28** and **64** is achieved, is analogous to the inserted sample cell core of the claimed invention.

Thus, it would have been obvious to a person having ordinary skill in the art to modify Rich to include a receiving chamber in the cell body for an inserted cell core so as to simplify the molding fabrication process and increase flexibility in the geometry of the optical path length, as taught by Clement.

Rich already discloses mechanical retention of components using a snap-in retainer ring (**350** or **352**) around an aperture (**340** or **342**) of the core region **314**. Given that any inserted core region would have to fit through the aperture, use of the snap-in retainer ring system to hold the core in place would have been obvious.

Thus, it would have been obvious to a person having ordinary skill in the art to modify Rich to use the snap-in retainer ring to hold the inserted sample cell core in place in the sample cell body so as to minimize the amount of additional fastening techniques necessary in assembly of the completed sample cell.

In regards to claims 7 and 11, Rich does not disclose any form of mechanical keying of the sample cell core to insure alignment between the flowpaths of the core and the body.

Clement teaches that the rotor **50**, once inserted into the body **12**, is mechanically retained in place via ridge **52** (reference Figure 3). Ridge **52** on the rotor **50** fits snug with a groove **54** on body **12**. This insertion method not only provides a means of retention of the rotor **50** to the body **12**, but also serves as mechanical keying of the rotor **50** to insure lateral alignment of the axes of the flowpaths **28** and **64**, as illustrated in Figure 3.

Thus, it would have been obvious to a person having ordinary skill in the art to modify Rich to include a mechanically keyed sample core as a means of circumventing labor intensive practices for insuring alignment of flowpaths, as taught by Clement.

10. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rich, as applied to claims 1-5 and 8-9 above, and further in view of Bach et al.

With regards to claim 17, although not specifically discussed above, Rich discloses an inlet portion **332** and an outlet portion **336** in Figure 14, but inlet and outlet portions are not coaxial.

With regards to claim 18, Rich does disclose a first connecting portion (the right half of bore **332**) connecting the inlet (**332**) to one end of the sample chamber and a second connecting portion (communicating passage **334**) connecting the outlet (**336**) to the other end of the sample chamber.

With regards to claim 19 and 20, Rich discloses connecting portions parallel to the inlet and outlet portions and perpendicular to the sample chamber portion.

Bach et al. disclose an "L-shaped" optical flow cell consisting of an inlet portion **34** and an outlet portion **36**, which are both coaxial with the centerline of the sample cell, as shown in Figure 3. A sample chamber **12** is located interior to the sample cell and has a defining axis **14** perpendicular to the inlet and outlet axis. Further, Bach et al. teach that the inlet **34** and outlet **36** are connected to the sample chamber **12** via connecting portions **32** and **29**, respectively. These connecting portions are oriented at non-90° angles with respect to the axis of the inlet and outlet. Said connecting portions are also parallel with each other, as is evident from inspection of Figures 3 and 5.

It would have been obvious to modify Rich in view of the teachings of Bach et al. to have the inlet and outlet portions be coaxial so as to reduce the complexity of the molding process.

Given coaxial inlet and outlet portions, the connecting portions need to extend away from the centerline of the sample cell to reach the extremities of the sample chamber, thereby maximizing optical path length for gas detection. The choice of non-90° angles allows this to occur while minimizing unswept volume and flow profile distortion. With this in mind, it would have been obvious to modify Rich to having connecting portions at angles different than 90° with the inlet/outlet axes, as taught by Bach et al.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Kamahori et al. (US Patent #4823168) disclose a substantially "Z-shaped" configuration for the flowpath of an optical measurement flow cell.

Braig et al. (US Patent # 6095986) disclose a disposable airway adapter with a rectangular aperture in the central region of the cell, which could serve as a mechanically keyed receiving chamber for an inserted sample cell core.

Dussault (US Patent #5261415) discloses a CO_2 mainstream capnography sensor, which employs a cross-path infrared detection scheme of flowthrough gas.

Isaacson et al. (US Patent #6190327) disclose a disposable airway adapter for use with a carbon dioxide detector wherein the source and the detector are on the same side of the airway and attaches via mechanical detents.

Kofoed et al. (US Patent #5789660) disclose a multiple function airway adapter that uses infrared absorption techniques for CO_2 concentration monitoring in combination with a flow sensor to monitor airflow profiles.

Rich et al. (US Patent #5616923) claims the use of the cuvette of Rich (US Patent #5693944), described above, in a gas analyzer system.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick F. Rosenberger whose telephone number is 571-272-6107. The examiner can normally be reached on 7:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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